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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,091	12/06/2004	Xudong Zhu	CNIP-A-PCT-US	1126

7590 02/23/2007  
Hudak Shunk & Farine Co  
Suite 307  
2020 Front Street  
Cuyahoga Falls, OH 44221

EXAMINER
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WILSON, GREGORY A

ART UNIT	PAPER NUMBER
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3749

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/23/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/517,091

Applicant(s)

ZHU, XUDONG

Examiner

Gregory A. Wilson

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 10-12 is/are rejected.
- 7) ☒ Claim(s) 7-9 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

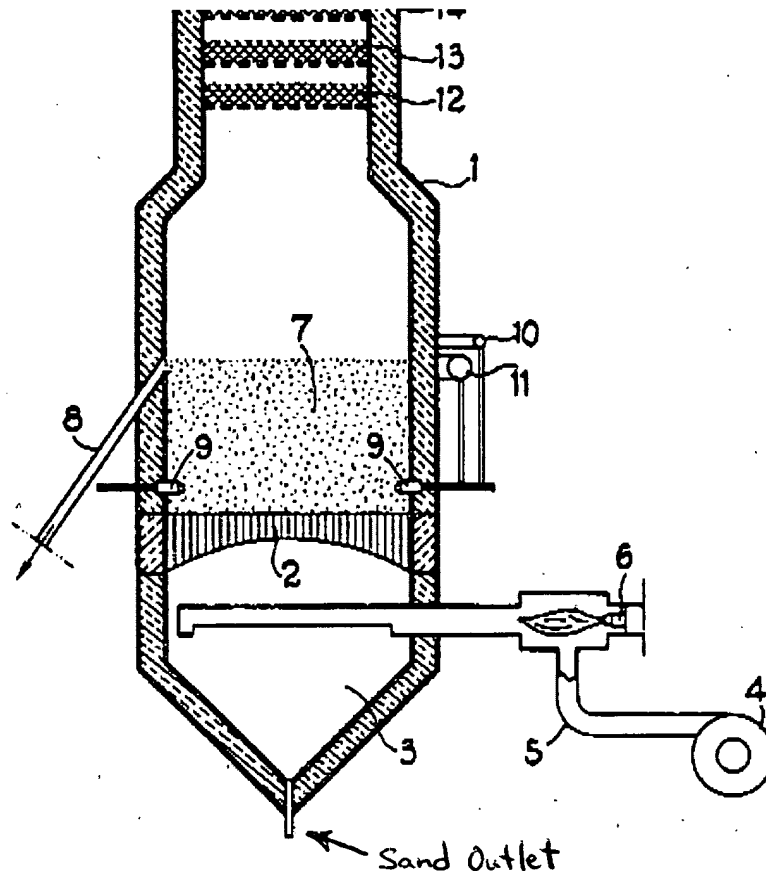
## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1-5 and 10-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Meunier (4,423,558) in view of Gringras (3,503,790). **Meunier** discloses a device for heat exchange between solid particles (sand) and a gas current and includes a furnace (1), a sand inlet (16) arranged at the top of the furnace body, a smoke discharge and dust removing port (18), a hearth and sand outlet near the combustion mouth structure (SEE enclosed illustration), a combustion mouth (6) arranged in the lower part of the furnace body, a multi-layer heat exchanger (12-15) which are mesh grill made of a plurality of steel strips (this anticipates the crisscrossly, lath, and sieve hole limitations), and a sand inlet guidance (16, 17).



The combustion mouth structure resides in the windbox (3), which, at its lowermost portion, shows what appears to be an outlet which is an opening inherently capable of passing fine sand particles. Meunier however provides no explanation of this portion of the furnace. Gringas is considered related art since it pertains to a tower (1) for preheating sand and a reactor (13) for further processing of hot sand. Gringas also teaches grilles (6) and (8) by which the sand grains may fall through. Figure 1 & 4 of Gringas show that it is well known in the art for a sand outlet (4) to be arranged at the bottom of the furnace body near the side of the combustion mouth (as indicated by elements 2 & 3), and hence a person of ordinary skill in the art would reasonably interpret the furnace of Meunier to function similarly to that taught by Gringas. It would

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have been obvious at the time the invention was made, to a person having ordinary skill in the art to which the subject matter pertains to have modified the furnace of Meunier to include the more distinguished sand outlet arranged at the bottom of the furnace near the side of the combustion mouth as taught by Gringas for the purpose of discharging the heated sand from the furnace structure.

### ***Allowable Subject Matter***

Claims 7-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Response to Arguments***

Applicant's arguments filed 12/4/06 have been fully considered but they are not persuasive. The applicants primary argument appears to be that the particles in the fluidized bed of the prior art reference Meunier, remain suspended in the fluidized bed and **only** escape through overflow conduit 8, and concludes that the particles do not exit through the bottom of the furnace. The applicant furthermore argues that there is no explanation on how the particles are removed and that one can only speculate that they are blown out through some side port from the air being admitted or in some other manner. The examiner respectfully disagrees, since nowhere in Meunier does it state that conduit (8) is the **only** means of sand removal, and directs the applicants attention back to the fluidization grill (2) under which is positioned a wind box. It is very well

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known that the grill is a mesh structure capable of allowing the flow of gas/air to pass therethrough. It is also conceivable for fine fluidized bed particles to fall through the mesh structure by way of gravity. Meunier indeed does not provide a clear teaching of what the opening at the bottom of the wind box (3) is, however the now incorporated reference of Gringas (3,503,790) teaches that it is well known in the art that the outlet portion of the structure equivalent to the wind box (3) can provide an exit for sand particles through the bottom of the furnace in a location near the combustion mouth. It is concluded that a person having ordinary skill in the art would recognize the [port] at the bottom of the wind box of Meunier as an opening for fine particle removal.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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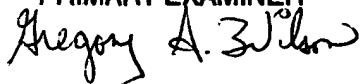
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory A. Wilson whose telephone number is (571)272-4882. The examiner can normally be reached on 7 am - 4:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Josiah Cocks can be reached on (571) 272-4874. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**GREGORY WILSON**  
**PRIMARY EXAMINER**



Gaw

February 20, 2007